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RESEARCH ARTICLE

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Investigating how online fashion product page design affects the consumer's clothing fit appraisal

Courtney Chrimes¹  | Rosy Boardman² | Gianpaolo Vignali² | Helen McCormick¹

¹Arts and Humanities, Manchester Metropolitan University, Manchester, UK

²Department of Materials, University of Manchester, Manchester, UK

Correspondence

Courtney Chrimes, Arts and Humanities, Manchester Metropolitan University, Manchester, M15 6BG, UK.

Email: c.chrimes@mmu.ac.uk

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Abstract

Clothing fit is the most important consideration during the consumer's garment appraisal process but is the primary reason for the extensive number of online returns generated in the fashion industry. This suggests that when shopping online, consumers are not provided with sufficient information about the fit of a garment. This issue is even more imperative now as COVID-19 has accentuated the shift to shopping for clothing online. Thus, how fashion retailers communicate clothing online is a critical challenge requiring immediate attention. Underpinned by the Stimulus–Organism–Response (S–O–R) framework, this research undertakes a between-subjects factorial web-experiment to investigate how different types of fit information affect the consumers' online garment evaluations and purchasing decisions. The results from 400 UK female responses show that whilst the presence of diverse body shapes (vs. one body shape) enhances the consumers' garment fit evaluations, it does not increase purchase intentions. Alternatively, verbal fit information in the form of clothing fit reviews (vs. absence) increased product fit diagnosticity but had no significant effect on concerns with fit online or purchase intentions. The results provide novel insights into how fashion retailers can enhance the communication of clothing fit on their product pages.

1 | INTRODUCTION

COVID-19 has accelerated the shift to shopping for clothing online, with UK online fashion sales increasing by 26% to reach £24.5 billion in 2020 (Ceron, 2020). Despite this increase, online clothing returns are pervasive, with inaccurate fit being the primary reason (He et al., 2020). Research shows that clothing fit is the most important consideration during the consumer's garment appraisal process (Gupta, 2020) and a key criterion in producing brand loyalty, making the need for better fitting clothes a bottom-line imperative (The Interline, 2021). However, 49% of UK female online shoppers aged 16–34 struggle to find clothes that fit (Ceron, 2020), suggesting that fit information on the fashion retailers' websites is ineffective. Online fashion product pages limit the consumers' clothing fit appraisal to, (1) verbal fit information, such as sizes and fit descriptions (Bleier

et al., 2019), or (2) visual fit information including images of clothing worn by models which do not represent the average consumer's body shape (Sattar et al., 2019). No research to date has ascertained how consumers respond to these different types of fit information when shopping for clothes online, and how they influence their decision-making. This study aims to fill this gap in the literature by investigating how different types of fit information affect the consumers' online garment evaluations and purchasing decisions. The study also investigates whether the consumers' cognitive processes (concerns with fit online and perceived product fit diagnosticity) mediate the relationship between fit provision online and purchase intentions.

The inability to accurately appraise garment fit online galvanises females to buy multiple sizes and return those that do not fit (Lynch & Barnes, 2020). Interestingly, the online channel accounts for 30% of clothing returns compared to the 9.96% of clothes purchased in-store

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(Bertram & Chi, 2018). Accordingly, how fashion retailers communicate clothing fit online is a critical challenge that requires immediate attention. A further issue is the inability to appraise garment fit on different body types, which has resulted in a demand for more representative models in womenswear (Ceron, 2020). Whilst scholars have suggested that the inclusion of more 'realistic' models may be a better way to present garment fit online (Boardman & McCormick, 2019; Mulgrew et al., 2020; Yu & Damhorst, 2015), this proposition has never been tested. The limited research that has been conducted on models on fashion websites has focused on size rather than body shape (Plotkina & Saurel, 2019). For example, studies have investigated the impact of the fashion models' size on product risk (Shim & Lee, 2009), brand image (D'Alessandro & Chitty, 2011) and body satisfaction (Kim & Damhorst, 2013; Moreno-Domínguez et al., 2019; Yu & Damhorst, 2015). What remains unknown is the role of alternative body shape provisions on the consumers' online decision-making. The present study will fill this gap in the literature.

Online fashion consumers are no longer satisfied with retailer-curated product information and so, seek out objective product evaluations from user-generated (UG) content (Rodrigues et al., 2017). The most common form of UG content on the retailers' product pages are product reviews. Product reviews are independent product evaluations from the buyer's perspective (Wang et al., 2019). McKinney and Shin (2016) found that that fit was the most discussed criterion in clothing reviews, indicating the importance of reviews in helping with purchase decisions regarding fit. Indeed, scholars advocate that UG reviews can help reduce fit-related returns (Saarijärvi et al., 2017) and enable consumers to make better fit decisions (Shin & McKinney, 2017). However, the role of reviews on consumers' garment fit appraisal is under-researched. Extant research has only explored the valance of fit reviews (Shin et al., 2020; Shin & McKinney, 2017), as opposed to examining how fit information in a UG review affects the consumers' online clothing appraisal.

Consequently, the aim of this research is to investigate how different types of apparel fit information (*Visual*: one vs. diverse body shapes and *Verbal*: absence vs. presence of consumer fit reviews), on a product page, affect the females' perceived product fit diagnosticity, concerns with clothing fit online and, in turn, purchase intentions. The research advances to empirically test whether consumers' cognitive processes mediate the relationship between the type of fit provision online and purchase intentions. The findings provide novel theoretical and managerial insights regarding how fashion retailers can enhance fit provision online and help to reduce product returns due to inadequate fit.

2 | THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

2.1 | Stimulus–Organism–Response paradigm

This research adopts the Stimulus–Organism–Response (S-O-R) framework (Mehrabian & Russell, 1974) to investigate how consumer's process fit information from online stimuli in order to generate a final

behavioural response (Wang & Chang, 2013). The S-O-R framework postulates that environmental stimuli influence cognitive responses which mediate the relationship between environmental stimuli and a final behavioural response (Chopdar & Balakrishnan, 2020). The model has proven advantageous when investigating how online clothing presentation impacts internal processes and drives behavioural responses (Baytar et al., 2020; Boardman & McCormick, 2019; Kim, 2019; Kim & Lennon, 2008). Yet, to date, there is a paucity of research that has tested how verbal and visual fit information present on product page affects the consumers' cognitive and final behavioural responses and whether the consumers' cognitive processes (concerns with fit online and perceived product fit diagnosticity) mediate the relationship between online fit provision and purchase intentions. Hence, this study aims to fill this gap within existing literature.

2.2 | Visual and verbal fit stimuli online

Fashion product presentation on the retailers' websites is exceptionally influential on the consumers' decision-making (Boardman & McCormick, 2019). In apparel e-commerce, both visual and verbal stimuli are essential presentation components (Kim, 2019). Product stimuli that have been explored in research include product movement and videos (Boardman & McCormick, 2019; Jai et al., 2014; Park et al., 2005), product images (Kim, 2019; Kim & Lennon, 2008), zoom functions (Jai et al., 2014), virtual try-on avatars (Baytar et al., 2020; Shin & Baytar, 2014) and product descriptions (Kim, 2019; Kim & Lennon, 2008). However, many of these studies have explored product information sources in isolation (Narwal & Nayak, 2020) when, in reality, customers appraise multiple product cues simultaneously. Furthermore, despite the wealth of research investigating different online stimuli, studies have overlooked the role of verbal and visual fit information in the consumers' online decision-making. With research demonstrating the importance of garment fit during the consumer's decision-making process (Shin & Chang, 2018), an investigation of garment fit stimuli on a product page is necessary. Consequently, this study aims to overcome these limitations and respond to Wang et al.'s (2019) call to examine the effects of visual and verbal fit information on the consumer's cognitive processes and behavioural responses when shopping for fashion items online.

2.2.1 | Visual fit stimuli: Female body shape

Literature demonstrates that body shape is a vital consideration in the females' decision-making. Research shows that females select certain garments in order to (1) achieve their desired body shape (D'Alessandro & Chitty, 2011; Zhang et al., 2017) or (2) hide or emphasise areas of their body (Grogan et al., 2013; Kasambala et al., 2014). This suggests that body shape will be important in aiding the consumers' online garment fit appraisal. However, the provision of diverse body shapes online is lacking. When shopping online, consumers cannot physically try-on a garment and so, seeing a model

wearing it becomes a vital indicator in their appraisal (Xia et al., 2020). Research has verified that online product images can reduce product returns (Kim & Damhorst, 2013; Sahoo et al., 2018), mitigate product risk and facilitate online decision-making (Park et al., 2005). Boardman and McCormick (2019) discovered that consumers spent more time looking at model images than any other source of product information. Collectively, these findings emphasise the critical role of model images on the decision-making process.

However, researchers have unveiled that the type of model used on a fashion product page is problematic. Online consumers appraise the fit of a garment on a model's body, which often does not represent the body shape of the average consumer (Sattar et al., 2019). The over-representation of 'ideal' body shapes can be further evidenced by Shin and Baytar's (2014) research, which unveiled that, from 592 online fashion models, 60% of them had an X body shape. Nash (2019) found that participants were deterred from fashion retailers' websites as they perceived the image of the model to be unrealistic. Instead, the author found that participants perceived social media platforms to be more beneficial as they permitted consumers to follow bloggers who had a similar body shape to themselves. Kerviler et al.'s (2017) support this by unearthing that female consumers turn to Instagram to see what products look like on 'non-idealised' body shapes.

Therefore, in the present study, body shape was chosen as the visual fit stimulus. This responds to the call by Plotkina and Saurel (2019) that future research should test whether the presence of models with diverse body shapes wearing the same garment can help increase the consumers' online purchase intentions. This recommendation has been further sustained by academics within the field of online marketing and consumer behaviour (Baytar et al., 2020; Boardman & McCormick, 2019; Saarijärvi et al., 2017; Yu & Damhorst, 2015). Specifically, Gupta (2020) posits that the factors currently galvanising unsatisfactory fit are a lack of understanding of different body shapes and the over-representation of ideal body shapes online. Accordingly, an investigation into the provision of clothes worn by different body shapes on the fashion retailers' product pages is paramount. Therefore, adhering to the assertions by Gribbin (2014) who advocate that garment fit is not about size but body shape, the present study will investigate the effect of body shape (stimuli) on the consumers' cognitive (organism) and behavioural outcomes (response).

2.2.2 | Verbal fit stimuli: UG Clothing fit reviews

Verbal product information on the fashion retailers' websites includes product titles, product descriptions, sizing charts and UG reviews (Bleier et al., 2019; McKinney & Shin, 2016). Research has found that verbal product information helps consumers feel more knowledgeable about a product (Kim & Lennon, 2008; Kim & Lennon, 2010), increases purchase intentions (Kim & Lennon, 2008), ameliorates decision-making (Blanco et al., 2010), and helps to overcome visual product misconceptions (Baytar et al., 2020).

Product reviews are subjective information produced by consumers who have already tried a product and are keen to share their experiences with other consumers (Hazari et al., 2017; Wang et al., 2019). Saarijärvi et al. (2017) suggested that in order to reduce product returns, retailers should allow customers to review the size of a garment to support decision-making. However, to our knowledge, this recommendation remains inconclusive, suggesting further investigation is essential. Despite McKinney and Shin (2016) establishing that clothing fit is the most discussed product criteria in a garment review, existing studies have only examined the role of fit review valance on the consumers' decision-making (Shin et al., 2020; Wang et al., 2016). For example, Shin et al. (2020) investigated how valance fit reviews impacted review credibility and purchase confidence, finding that positive fit reviews were more compelling than negative fit reviews. Moreover, Wang et al. (2016) recognised that fit valance and fit preference found in reviews can reduce return rates. However, both studies overlooked how fit information found in reviews affected the consumers' decision-making. Similarly, Shin et al. (2020) suggested that UG fit reviews may provide consumers with first-hand fit information, which, in turn, may reduce the risks associated with buying garments online. What remains unknown is whether fit information present in UG reviews affects the consumers' concerns with fit online, perceived product fit diagnosticity and purchase intentions. Hence, further investigation is required.

2.3 | Perceived product fit Diagnosticity

Perceived product fit diagnosticity can be defined as the perceived credibility of information in the assisting consumers' product evaluations (Narwal & Nayak, 2020). In relation to the present study, perceived product fit diagnosticity is the extent to which a website can communicate relevant product information to help consumers appraise product criteria accurately (Pavlou & Fygenon, 2006; Yoo, 2020). Thus, it is concerned with how helpful certain product information is in the ameliorating consumers' decision-making (Wang & Chang, 2013).

Kempf and Smith (1998) posit that perceived product diagnosticity positively contributes to the cognitive evaluation of product attributes and so strongly recommend that future research should consider measuring this construct. However, the majority of studies have explored product information holistically rather than investigating the diagnosticity of specific product attributes. Despite this, literature has corroborated that perceived product diagnosticity can alleviate product uncertainty and increase consumer decision-making (Fang, 2012). Although garment fit is the prominent evaluative criterion before finalising a purchase (Gupta, 2020), the existing research has failed to address how different types of fit information affect the consumers' perceived product fit diagnosticity. To this end, we predict that:

H1a. When exposed to visual fit information in the form of diverse body shapes, females will experience

higher perceived product fit diagnosticity compared to the exposure of visual fit information in the form of one body shape.

H1b. When exposed to verbal fit information in the form of UG fit reviews, females will experience higher perceived product fit diagnosticity compared to the absence of UG fit reviews.

2.4 | Concerns with clothing fit online

Kim & Damhorst (2010, p.242) defined concerns with garment fit online as, “the subjectively determined expectations and amount of risk perceived by a shopper in relation to the fit and size of a garment in contemplating a particular purchase”. Online, where palpable clothing information is lacking, concerns with clothing fit are magnified due to the inability to physically appraise the product (Blanco et al., 2010; Jai et al., 2014; Kim & Lennon, 2010). Moreover, concerns with garment fit are multifaceted as different consumers may experience concerns with the physical (tightness), aesthetic (appearance), functional (movement) and social fit (perceived occasion suitability) of a garment based on their subjective experiences (Shin & Damhorst, 2018). Research that has explored concerns with fit online has only focused on visual information, in particular, the size of a fashion model (Kim & Damhorst, 2010, 2013) or Virtual Try-On avatars (Shin & Baytar, 2014) and has failed to address the impact of body shape and verbal fit information on the consumers' concerns with fit. Therefore, an investigation into how different types of visual and verbal fit information affect the females' concerns with clothing fit online is necessary. Accordingly, we predict that:

H2a. When exposed to visual fit information in the form of diverse body shapes, females will have fewer concerns with fit online compared to the exposure of visual fit information in the form of one body shape.

H2b. When exposed to verbal fit information in the form of UG fit reviews, females will have fewer concerns with fit online compared to the absence of UG fit reviews.

2.5 | Fit stimuli and purchase intentions

Literature indicates that different types of product information have various impacts on the consumers' purchase intentions when shopping for apparel online. Yet, there is a debate within the literature concerning which product information (visual or verbal) is the most influential on purchase intentions. Kim and Lennon (2008) explored the use of different online verbal and visual product presentations on the consumers' purchase intentions and found that only verbal information had an impact on purchase intentions. Similarly, Silva et al.

(2021) found that verbal descriptions evoke higher levels of haptic imagery, which influences purchase intentions. Interestingly, St-Onge et al. (2017) investigated the impact of visual product information on the consumers' behavioural outcomes and unveiled that the more attractive the respondent perceived the fashion model to be, the more inclined they were to purchase the outfit. However, what remains unknown is how different types of fit information affect the consumers' purchase intentions. Therefore, this research will respond to the call by Plotkina and Saurel (2019) that future research should test whether displaying the same garment on various models with different body types can help to increase purchase intentions.

Additionally, Rodrigues et al. (2017) found that ‘hand on descriptions’ from consumers who have physically experienced the product led to a greater purchase of clothes online. Similarly, Racherla et al. (2012) demonstrated that the opinion of other consumers reduced the consumers' uncertainty when considering their purchase intention. However, research has failed to address how the presence (vs. absence) of UG fit reviews from consumers who have experienced the fit of a garment influences the females' online purchase intention. Based on the aforementioned, we predict that:

H3a. When exposed to visual information in the form of diverse body shapes, females will report higher purchase intentions compared to the exposure of visual fit information in the form of one body shape.

H3b. When exposed to verbal information in the form of UG fit reviews, females will report higher purchase intentions compared to the absence of UG fit reviews.

2.6 | Cognitive evaluations and purchase intentions

Prior research demonstrates that if consumers perceive information about a product to be diagnostic then this may lead to consumers feeling more knowledgeable about the product attributes and therefore more confident in what they are purchasing (Jiang & Benbasat, 2007; Kempf & Smith, 1998; Wang & Chang, 2013). Indeed, Orus et al. (2017) discovered a strong positive correlation between the ease of imagining a product and the intention to purchase it. However, literature has yet to demonstrate a relationship between perceived product fit diagnosticity and online purchase intentions.

Moreover, the existing research has corroborated that product uncertainty is heightened in the online environment as consumers cannot physically test the product until post-consumption (Saarijärvi et al., 2017). Consequently, product risk is the most frequently cited reason as to why people are reluctant to shop and purchase products online (Dai et al., 2014). For example, Kim and Damhorst (2010) found that concerns with imagining garment fit online were negatively related to purchase intentions.

This study will advance to test whether the consumers' cognitive influences, in the form of perceived product fit diagnosticity and

concerns with fit online, mediates the relationship between clothing fit provision online and purchase intentions. Accordingly, based on the above, we predict that:

H4a. Females who experience higher perceived product fit diagnosticity will report increased purchase intentions compared to when they experience low perceived product fit diagnosticity.

H4b. Females who have fewer concerns with garment fit online will report increased purchase intentions compared to when they experience high concerns about clothing fit online.

H4c. Perceived product fit diagnosticity and concerns with fit online mediate the relationship between the type of clothing fit provision online and females' purchase intentions.

To summarise, the research framework (Figure 1), proposes that when exposed to visual fit information in the form of diverse body shapes (vs. one body shape) and verbal fit information in the form of UG fit reviews (vs. absence), females will experience higher perceived product fit diagnosticity, fewer concerns with clothing fit online and higher purchase intentions. Moreover, the framework suggests that higher perceived product fit diagnosticity and lower concerns with fit online will increase the females' online purchase intentions. Finally, the framework also posits that females' perceived product fit diagnosticity and concerns with fit online will mediate the relationship between the type of fit provision online and females' purchase intentions.

3 | METHODOLOGY

This study adopts a sequential multi-phase mixed-methods approach to investigate how different fit stimuli (verbal vs. visual) on a fashion retailer's product page affects the consumers' online garment fit appraisal. Phase 1 identifies the most/least popular dress styles purchased by 343 UK females aged 18–34 to ascertain appropriate product stimuli. Phase 2 explores the body shapes and physical garment fit appraisal of 30 UK females aged 18–34 through body scanning and semi-structured interviews. Phase 3 undertakes a between-subjects factorial web-experiment to investigate how different combinations of visual (*body shape*: one vs. diverse) and verbal (*UG fit reviews*: absence vs. presence) fit information affect 400 female subjects' cognitive and behavioural responses. Figure 2 provides a summary of the research methodology.

4 | PHASE 1: DRESS STIMULI SELECTION (ONLINE DRESS SURVEY)

4.1 | Materials, methods, results

During a period of 1 month (10 October –13 November, 2018), an online survey was distributed via social media platforms to ascertain the most and least popular dress styles commonly purchased to a convenience sample of 343 UK females, aged 18–34. Dresses were chosen as this type of garment considers key areas of the body (Hernández et al., 2019). Black dresses were selected to minimise the effect of clothing attractiveness, personal preference and fashion trends (Lee & Lee, 2020). The online survey utilised three, 7-point unipolar semantic scales to measure the respondents' thoughts towards

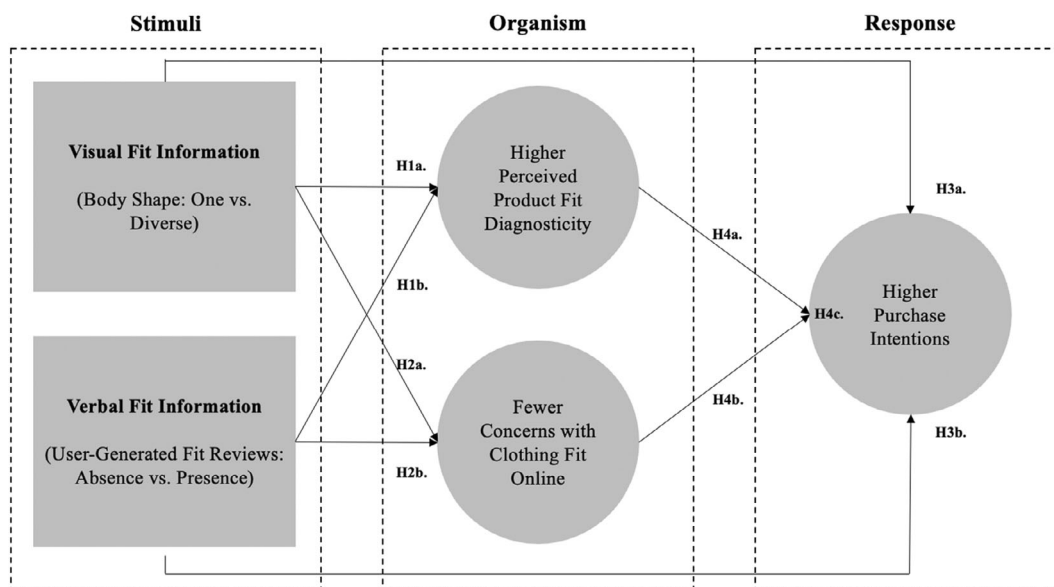


FIGURE 1 Hypothesised theoretical S-O-R model

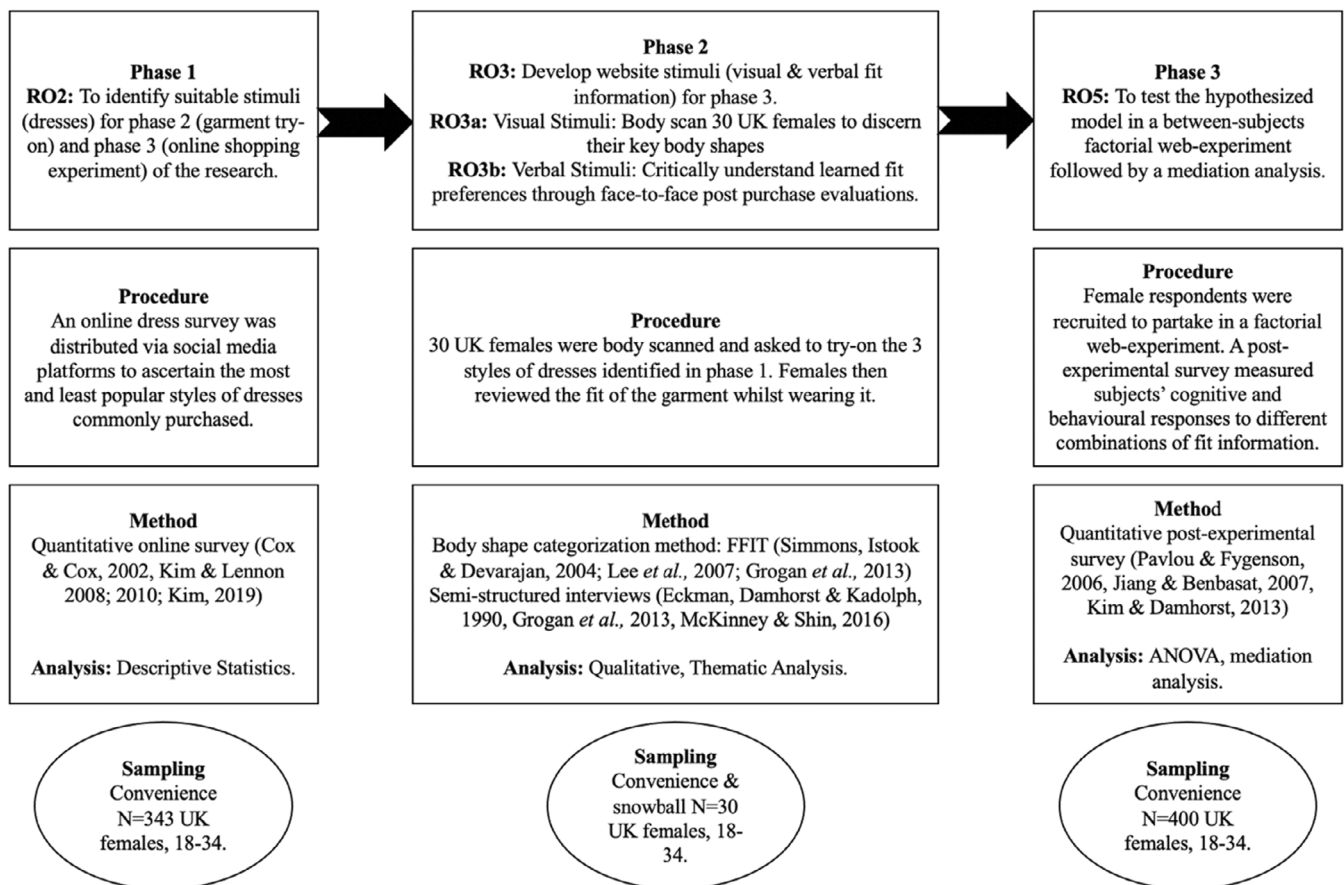


FIGURE 2 Research methodology outline

each dress, anchored by the constructs, likable-not likable/ flattering-not flattering/similar to what I wear- not similar to what I wear, developed by Cox and Cox (2002) and further implemented by Kim and Lennon (2008), Kim (2019) and Baytar *et al.* (2020). The three dress styles that received the most neutral ratings were the bodycon dress ($M = 3.69$, $SD = 1.1$), pencil dress ($M = 3.37$, $SD = 1.3$) and maxi dress ($M = 2.87$, $SD = 1.4$). Consequently, these styles were taken forward for phase 2 and 3 of the research.

5 | PHASE 2: GARMENT TRY-ON AND BODY SCANNING

5.1 | Materials and methods

The aim of phase 2 was to develop the visual (body shape) and verbal (UG reviews) stimuli for the main experiment (phase 3) by capturing the participants' first-hand fit evaluations of the chosen dress styles on varying body shapes. A convenience sample of 30 UK females, aged 18–34, were body scanned using a size stream scanner and objectively categorised into a body shape typology using the FFIT method (Lee *et al.*, 2007). A sample size of 30 was deemed appropriate as not only is it larger than the average sample size used in body

scanning research (Grogan *et al.*, 2013; Zhang *et al.*, 2017) but also it ensured that saturation point was reached in line with the previous studies conducting semi-structured interviews (Lipson *et al.*, 2020; Rahman, 2018). Once the body scans were completed, participants were asked to try-on each dress style identified in phase 1. All materials and phases of the research, including interview questions and body scanning procedures, were subjected for review by the University's ethical approval board and subsequently approved.

5.1.1 | Development of verbal stimuli: Qualitative interviews

Semi-structured interviews enabled the researcher to gain insight into how participants with different body shapes experienced fit. Adhering to prior methodologies, whilst wearing the dresses, participants were asked predetermined questions relating to garment fit to capture their first-hand fit appraisal (Grogan *et al.*, 2013; Rodrigues *et al.*, 2017). Interview questions were taken from the clothing literature (Grogan *et al.*, 2013; McKinney & Shin, 2016; Shin & Damhorst, 2018). This procedure facilitated the development of the verbal fit stimuli (UG fit review) for the web experiment (phase 3). Once saturation point was

reached, the researcher undertook a line-by-line coding technique to identify initial themes and sub-themes, and then coded interview transcripts in order to highlight the relationship between these themes (Grogan et al., 2013).

From the semi-structured interviews, participants evaluated garment fit through four key variables, namely, aesthetic fit, functional fit, physical fit, and social fit, a finding further corroborated by McKinney and Shin (2016), Shin and Damhorst (2018). The fit reviews that were chosen to feature on the experimental websites were based on the following criteria:

1. The review had to encapsulate all fit parameters: Social fit, physical fit, aesthetic fit and functional fit (Shin & Damhorst, 2018).
2. The review had to exhibit all fit satisfaction/dissatisfaction themes that were established via the thematic coding of the 30 semi-structured interviews.
3. The presence of both positive, negative and neutral reviews was essential to control for review valance in line with the previous experimental methodologies (Benlian et al., 2012).

The presence of positive, negative and neutral reviews was essential to control for review valance, in line with the previous experimental methodologies (Benlian et al., 2012). Indeed, Ahmad and Laroche (2015), in a study which investigated how emotions affected the helpfulness of a review, found that both happiness (positive) and disgust (negative) had a positive impact on the helpfulness of a review. Additionally, fit review valance has already been investigated in the prior literature (Shin et al., 2018; Shin et al., 2020) and so, it was not a topic of enquiry for this research. Moreover, five reviews were considered an appropriate number to feature as Tata et al. (2020) discovered that the majority of participants ($N = 144$, 35.3%) claimed to read 4–6 reviews online before finalising their purchase decision. Five reviews were selected to ensure that participants who were exposed to treatments with user generated fit reviews present did not experience information overload. Appendix B depicts the reviews that featured on the websites.

5.1.2 | Development of visual stimuli: body scanning

The key measurement outputs from each of the 30 body scans were uploaded to an excel spreadsheet in order to classify the females' body shapes using the Female Figure Identification Technique (FFIT) (Simmons et al., 2004). This body shape categorisation method is advantageous in its ability to quantitatively discern female body shapes using proportional measurements of the key body circumferences (bust, waist, hip and high hip), rather than relying on visual body shape analysis which is limited to subjectivity (Grogan et al., 2013). Additionally, this method is validated within the body shape and garment fit literature (Grogan et al., 2013; Lee et al., 2007; Zhang et al., 2017), deducing that it is the most accessible approach for body

shape classification (Gill, 2018). From the 30 body scans, 5 body shape typologies were unveiled including: triangle ($N = 1$, 3.3%), bottom hourglass ($N = 13$, 43.3%), hourglass ($N = 2$, 6.7%), rectangle ($N = 10$, 33.3%) and spoon ($N = 4$, 13.3%). The prominent body shape category discovered was the Bottom Hourglass ($N = 13$, 43.3%) followed by rectangle ($N = 10$, 33.3%). Hence, the 4 body shapes that featured within the diverse body shape website treatments were bottom hourglass, rectangle, spoon and triangle.

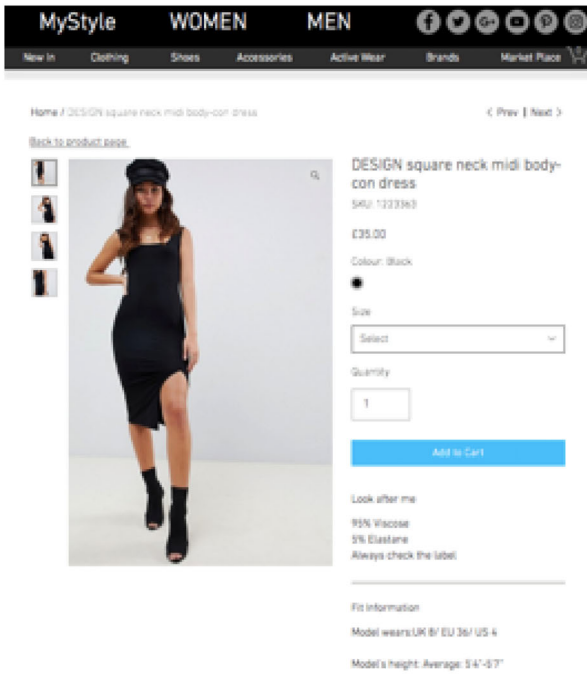
6 | PHASE 3: MAIN ONLINE EXPERIMENT

6.1 | Development of website treatments

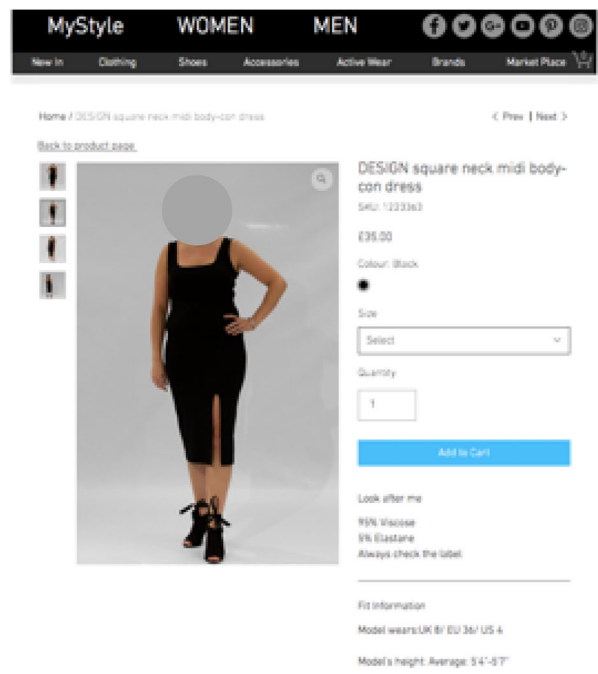
The purpose of this study was to examine how visual (body shape: one vs. diverse) and verbal (UG reviews: absence vs. presence) fit information on a fashion retailer's product page affect the consumers' cognitive and behavioural responses. An online experiment was conducted, enabling us to manipulate levels of fit information to establish the associations between fit information and their varied influences on perceived product fit diagnosticity, concerns with fit online and purchase intentions. As two types of fit information needed to be manipulated, we conducted a between-subject two-way factorial experiment to avoid any confounding effects resulted from repeated participation and cross contamination (Lazar et al., 2017; Saunders et al., 2019).

To fully control treatment levels of experimental variables, we developed four versions of the experimental website using an online commercial website builder Wix. A pilot test was conducted to examine the experimental procedures, manipulate treatments and validate the instruments. Based on the subjects' suggestions, any issues were revised. To increase the external validity of the study, the layout of each product page emulated the existing leading fashion e-commerce designs, and the selection of information features was based on the design of prior web-experiments (Kim, 2019). Each of the four websites offered the three identical styles of dresses identified in phase 1 (online dress survey) to ensure the respondents' product preferences did not impede on their browsing experience. To avoid the influence of brand choice a fictitious brand name, 'MYSTYLE', was used, adhering to the previous research recommendations (Kim, 2019; Rodrigues et al., 2017). The website treatments are evidenced in Figure 3.

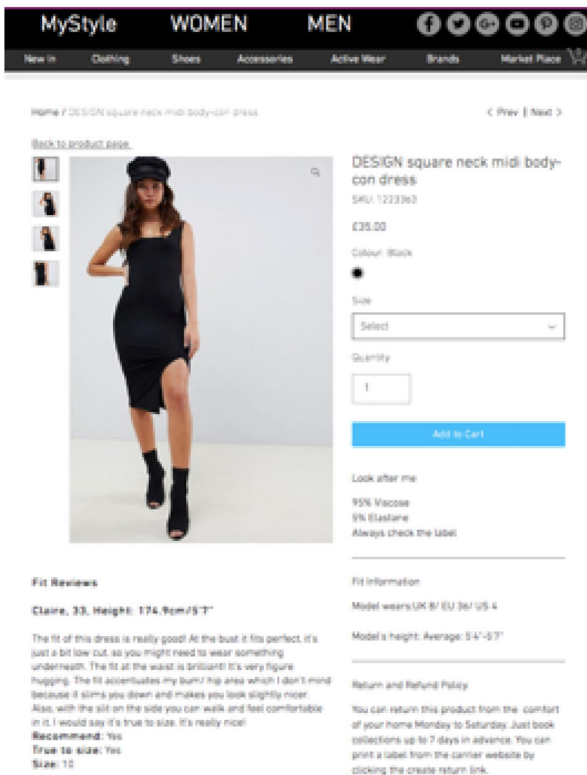
Figure 4 further evidences the four diverse body shapes (Bottom Hourglass, Rectangle, Spoon and Triangle) that were used in website treatments 2 and 4. Subjects were instructed to view all images of the models (four per product information page), despite their assigned treatment, as they normally would when browsing for a dress online. This approach was adopted to not only replicate a real-life online browsing experience but also to ensure both website conditions (e.g., one body shape vs. diverse body shapes) were identical (e.g., 1 model per image, 4 model images in total) with the only difference being the body shape of the models.



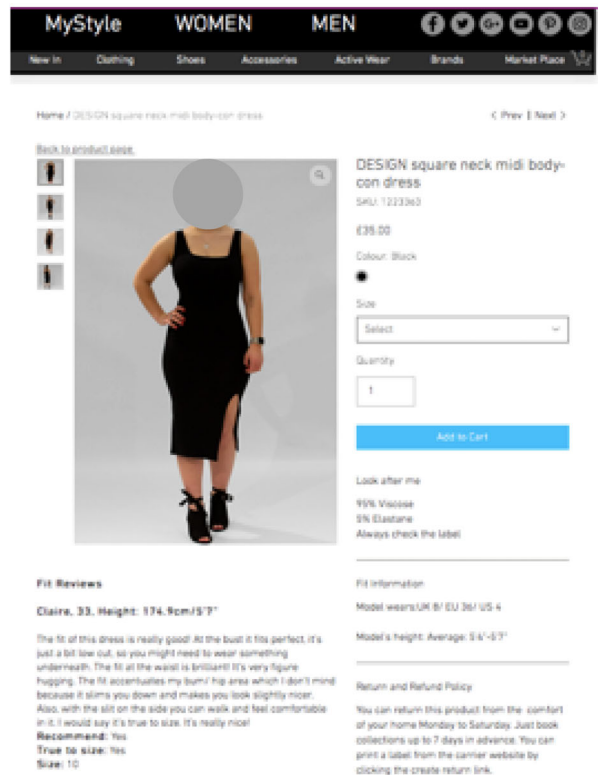
Control Treatment (Hourglass BS x Absence of UG fit reviews)



Treatment 2 (Diverse BS x Absence of UG fit reviews)



Treatment 3 (Hourglass BS x Presence of UG fit reviews)



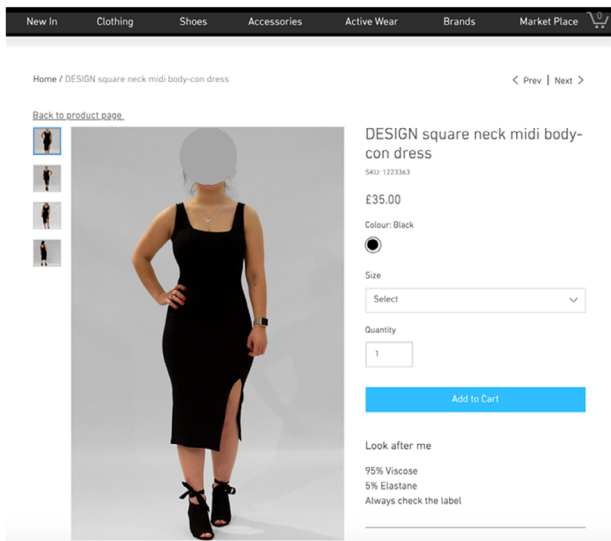
Treatment 4 (Diverse BS x Presence of UG fit reviews)

FIGURE 3 Website treatments [Colour figure can be viewed at wileyonlinelibrary.com]

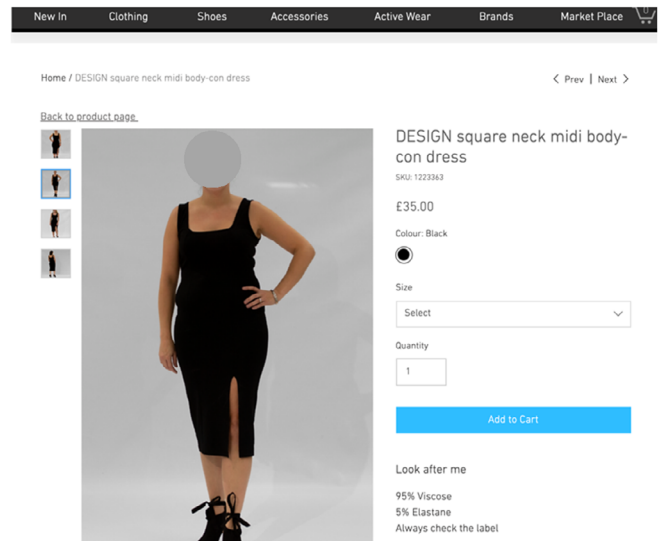
6.1.1 | Manipulation check

Manipulation checks were performed before analysis of the data through factorial ANOVAs and a Kruskal–Wallis test to ensure successful manipulation of the independent variables. The results of the

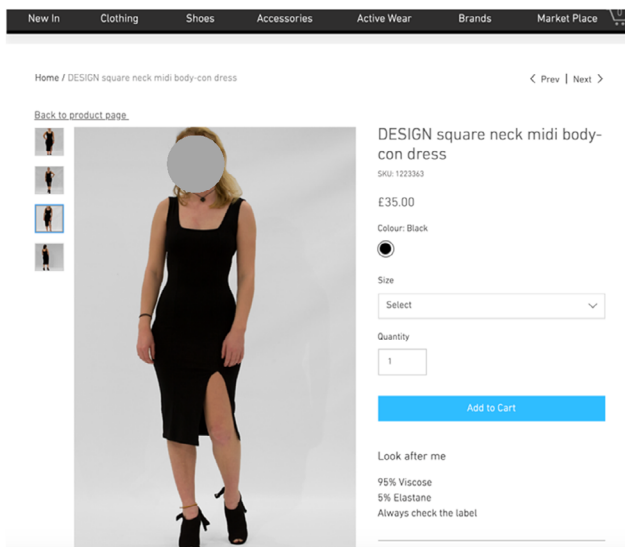
Welch's ANOVA revealed that subjects detected a significant difference in the body shapes of models amongst the treatments, Welch's $F(3, 213.198) = 14.21, p < 0.001, \text{est } \omega^2 = 0.09$. The results from the Kruskal–Wallis H test showed that there was a statistically significant difference in the presence vs. absence of UG fit reviews across the



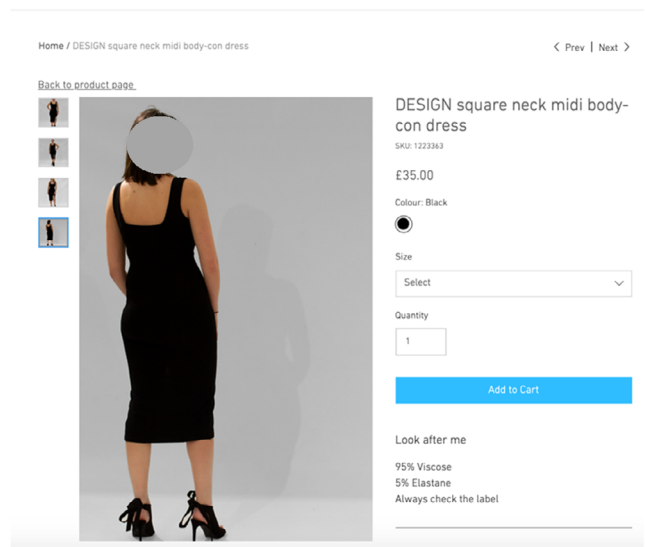
Body Shape: Bottom Hourglass



Body Shape: Rectangle



Body Shape: Spoon



Body Shape: Triangle

FIGURE 4 Diverse body shapes identified in phase 2. The four body shapes featured in Treatment 2 and 4 (Diverse Body Shape condition). [Colour figure can be viewed at wileyonlinelibrary.com]

four groups, $H(3) = 31.074, p < 0.001$. Hence, the results demonstrate that the manipulation of the independent variables were successful.

6.1.2 | Subjects and experimental procedure

During a period of 2 weeks (20 September–4 October 2019), 400 UK female respondents aged 18–34 were recruited from Qualtrics using non-probability convenience sampling, ensuring the random assignment of respondents to one of the four treatments. Qualtrics was deemed an appropriate platform to disseminate the experiment, as prior experimental studies have validated the effectiveness of the platform (Smink et al., 2019), and it enabled the obtainment of real

consumer responses. Adhering to prior experimental procedures, the research adopted a scenario-based technique to capture authentic responses from subjects and to emulate a real-life shopping experience (Narwal & Nayak, 2020; Park et al., 2005). Once respondents agreed to take part in the study, they were asked to browse the website with the intention to purchase a dress for an evening occasion.

From the 400 responses, 7 questionnaires were omitted from the final analysis as the respondents did not meet the inclusion criteria. Thus, a total of 392 useable questionnaires were yielded. This sample size was deemed appropriate as not only does it exceed the recommended sample size for factorial research design (Field & Hole, 2003; Hair et al., 2010; Lazar et al., 2017), but it is also in line with prior online experimental research sample sizes (Kim, 2019; Kim & Lennon, 2010; Narwal & Nayak, 2020). Descriptive statistics

established that 37.8% ($N = 148$) of the total sample were aged 18–24, whereas 62.2% ($N = 244$) were aged 25–34. These findings are important as they verify that all subjects who took part in the experiment ($N = 392$) fulfilled the target age criteria of 18–34. All subjects ($N = 392$, 100%) verified that they had purchased a dress online in the past year, with 26.5% ($N = 104$) of subjects acknowledging that they purchase dresses online every month or every couple of months. All respondents needed to be familiar with purchasing a dress online as different garment types may encounter different fits appraisal online (Boardman & McCormick, 2019).

Respondents were randomly assigned to one of the four experimental conditions: (1) one body shape, no fit reviews ($N = 96$); (2) diverse body shapes, no fit reviews ($N = 97$); (3) one body shape, fit reviews ($N = 100$); (4) diverse body shapes, fit reviews ($N = 99$). A Kruskal–Wallis H test demonstrated that there were no statistically significant differences in age, $H(3) = 0.050$, $p > 0.05$, ethnicity, $H(3) = 7.012$, $p > 0.05$, online purchasing frequency, $H(3) = 5.254$, $p > 0.05$, online dress purchasing frequency, $H(3) = 1.935$, $p > 0.05$ and clothing size $H(3) = 6.051$, $p > 0.05$, across the four groups. Hence, it was apparent that the randomisation of subjects into the four groups was successful and that subjects in each group derived from the same population.

6.1.3 | Measurement development – reliability and validity

To ensure content validity and reliability, the measures for the constructs were adapted from prior literature and modified according to the specific aim of the research. The items that were used to measure the constructs are outlined in Appendix A. To measure perceived fit diagnosticity, items were adapted from Kempf and Smith (1998), Jiang and Benbasat (2007), Pavlou and Fygenon (2006), Wang and Chang (2013), Filieri (2015) and Lin et al. (2018). Concerns with clothing with fit online were adapted from Kim and Damhorst (2010, 2013), Shin and Baytar (2014). Finally, purchase intentions were adapted from Kim and Lennon (2008, 2010). All items were measured using a 7 point-Likert scale and were refined according to the research objectives of this study.

SPSS software was used to obtain descriptive statistics, reliability analysis and exploratory factor analysis. Cronbach's alpha of all the scales exceeded .80 demonstrating the internal consistency of the constructs (Nunnally, 1967; Hair et al., 2010). An exploratory factor analysis (EFA) with (18 items) using PCA and oblique rotation (Promax) was conducted. An EFA ensured that items in a construct were related (convergent validity) and also discerned the extent to which similar concepts were distinct from each other (discriminant validity) ($KMO = 0.893$, $p < 0.001$). The results demonstrate that all constructs were unidimensional and all factor loadings were higher than the minimum score of .4 (Field, 2009). Appendix A shows the results of the reliability test and exploratory factor analysis.

7 | RESULTS

As the assumptions of ANOVA were adhered to, 2-way ANOVAs were used to test the first part of the S-O-R framework. The results from the factorial ANOVA empirically validate that females who were exposed to visual fit information in the form of diverse body shapes disclosed higher product fit diagnosticity, $F(1, 388) = 8.59$, $p < 0.05$, ($M_{\text{Diverse}} = 5.4$ vs. $M_{\text{One}} = 5.1$), and fewer concerns with fit online, $F(1, 388) = 4.26$, $p < 0.05$, ($M_{\text{Diverse}} = 4.6$ vs. $M_{\text{One}} = 4.9$), compared to females who were exposed to visual fit information in the form of one body shape. Thus, H1a and H2a were supported. Despite this, females who were exposed to visual fit information in the form of one body shape reported higher purchase intentions, $F(1, 388) = 20.392$, $p < 0.001$, ($M_{\text{One}} = 5.3$ vs. $M_{\text{Diverse}} = 4.8$), compared to females who were exposed to diverse body shapes. Hence, H3a was not supported. This extrapolates that whilst showing the same garment on diverse body shapes increases product fit diagnosticity and reduces concerns with fit online, purchase intentions are lower compared to when a garment is shown on one body shape.

Conversely, the results highlighted that females who were exposed to verbal fit information in the form of UG fit reviews, experienced higher product fit diagnosticity, $F(1, 388) = 8.17$, $p < 0.05$, ($M_{\text{Presence}} = 5.4$ vs. $M_{\text{Absence}} = 5.1$) compared to females who were not exposed to UG fit reviews. Thus, H1b was supported. However, the results also indicated that there was a non-statistically significant main effect of the presence (vs. absence) of a review on a female's concerns with fit online, $F(1, 388) = .328$, $p = .567$, ($M_{\text{Presence}} = 4.8$ vs. $M_{\text{Absence}} = 4.8$). This extrapolates that whilst UG fit reviews help to increase product fit diagnosticity, they did not impact concerns with fit online. Hence, H2b was not supported. The results also infer that there were no statistical differences in purchase intentions of females who were exposed to UG fit reviews, compared to females who were not, $F(1, 388) = .711$, $p = .400$, ($M_{\text{Presence}} = 5.0$ vs. $M_{\text{Absence}} = 5.1$). This suggests that the presence (vs. absence) of UG fit reviews on a product page does not influence the females' intentions to purchase a garment. Hence, H3a was not supported.

To test the second part of the S-O-R framework, PROCESS macro V4.1 for SPSS, which uses a regression-based approach to mediation (Hayes, 2013), was used to test H4a–H4c. Indeed, a parallel mediation analysis was tested at CI 95% with the bootstrapped sample equal to 5000. This macro approach is not only widely utilised by researchers (Hayes, 2013; Overmars & Poels, 2015) but it offers the lower and upper confidence level to test the significance of the indirect effect. Table 1 delineates the results of the parallel mediation analysis whereby the overall effect is divided into three distinct parts namely, total, direct and indirect (mediated) effects.

The mediation results demonstrated that the direct effect of the females' perceived product fit diagnosticity on purchase intention was positive and significant ($b = .70$, $SE = 0.07$, $p < 0.001$), indicating that females who reported higher perceived product fit diagnosticity were more likely to purchase online, compared to females who reported lower perceived product fit diagnosticity. Hence, H4a was supported.

TABLE 1 Total, direct and mediated effect of type of fit information on PI

Effect type	Effect size (b)	Standard error (SE)	Lower limit (CI)	Upper limit (CI)
Total effect	−0.149	0.055***	−0.257	−0.041
Direct effect	−0.242	0.049***	−0.339	−0.145
Total mediated effect	0.093	0.029**	0.038	0.152
Mediation through PD	0.099	0.028**	0.047	0.159
Mediation through concerns	−0.007	0.007	−0.023	0.003

Abbreviations: CI, confidence interval; PD, perceived product fit diagnosticity; Concerns, concerns with fit online; PI, purchase intentions.

** $p < 0.05$. *** $p < 0.01$.

The direct effect of concerns with garment fit online on the females' purchase intentions was also positive and significant ($b = 0.09$, $SE = 0.04$ and $p = 0.05$), inferring that females who reported higher concerns with fit online were also more likely to purchase the dress online. Thus, H4b was not supported.

Within Table 1, the total effect reflects the overall explanation of purchase intentions through the type of fit provision online, $b = -0.149$, 95% CI $[-0.257, -0.041]$, $t = -2.72$, $p = 0.007$. The direct effect of the type of fit provision online on purchase intentions was also found to be significant, $b = -0.242$, 95% CI $[-0.339, -0.145]$, $t = 4.91$, $p < .001$. Moreover, the overall indirect effect through the mediators (perceived product fit diagnosticity and concerns with fit online) was found to be significant, $b = 0.093$, 95% CI $[0.038, 0.153]$, $p < 0.05$. Interestingly, perceived product fit diagnosticity was found to be a significant mediator between the type of fit provision online and purchase intention, $b = 0.099$, 95% CI $[0.047, 0.159]$ and $p < 0.05$. Alternatively, cognitive concerns with fit online did not significantly mediate the relationship between type of fit provision online and purchase intentions, $b = -0.007$, 95%CI $[-0.023, 0.003]$ and $p > 0.05$. Hence, H4c which posits that both perceived product fit diagnosticity and concerns with fit online mediate the females' purchase intentions was not supported.

8 | DISCUSSION

Underpinned by the S-O-R framework, this study demonstrates how the inclusion of body shape stimuli and UG reviews affects the consumers' online fit appraisal. As hypothesised, this research confirmed that visual fit information in the form of diverse body shapes (vs. one body shape) enhanced product fit diagnosticity and reduced concerns with fit online. However, verbal fit information in the form of UG fit reviews (vs. absence) increased product fit diagnosticity, but had no significant effect on concerns with fit online or purchase intentions. Whilst this challenges prior research that has demonstrated that UG reviews can help females select garments based on their learned fit preferences (Shin & McKinney, 2017), a plausible explanation for there being no significant effects on concerns with fit online and purchase intentions is that participants can collect enough information from the visual fit information alone. Therefore, this research makes

novel contributions to the debate regarding the superiority of verbal vs. visual product information online.

This research challenges the findings of verbal superiority on purchase intentions (Kim & Lennon, 2008), by providing empirical support for the superiority of visual fit information on purchase intentions during the garment fit appraisal process. Specifically, there was an increase in purchase intentions when females were presented with the one body shape (vs. diverse). One explanation of this finding, as posited by Lonergan et al. (2018), is that the aim of a fashion model is to permit consumers to envisage their aspirational selves. Indeed, studies that have investigated the size of fashions model online also found that purchase intentions were higher for skinnier models (vs. plus size models) (D'Alessandro & Chitty, 2011; St-Onge et al., 2017). Thus, it can be extrapolated that whilst the presence of diverse body shapes reduced concerns with fit online and increased product fit diagnosticity, it did not lead to higher purchase intentions because what looks good on one body does not necessarily look good on another.

8.1 | Theoretical and managerial contributions

The present research provides novel theoretical contributions to fashion e-commerce design and product presentation literature. The findings provide evidence for the role of body shape on the online garment fit appraisal by demonstrating that the inclusion of diverse body shapes on a product page can increase product fit diagnosticity and reduce concerns with fit online. This study found that whilst UG fit reviews increased product fit diagnosticity, they did not mitigate concerns with fit online nor increase purchase intentions, providing empirical evidence for the superiority of visual information during the garment fit appraisal process. This research extends the S-O-R framework to incorporate visual and verbal fit stimuli providing empirical validation of the online garment fit appraisal process, which is currently absent within existing research. Indeed, although prior literature has established the saliency of garment fit evaluation (Shin & Chang, 2018), until now, existing research has failed to investigate which types of online garment fit information affect consumers' garment appraisal.

Secondly, studies that have investigated online product presentation on fashion websites have either (1) overlooked fit information or

(2) explored product information sources in isolation (Bleier et al., 2019; Narwal & Nayak, 2020), when in reality customers appraise multiple product cues simultaneously. This research provides novel contributions to the literature by ascertaining that although both visual and verbal fit information affect consumers' online garment appraisal, only visual fit information affects purchase intentions during the garment fit appraisal process.

Thirdly, by conducting a mediation analysis, this study found that the females' perceived product fit diagnosticity on purchase intention was positive and significant ($b = 0.70$, $SE = 0.07$ and $p < 0.001$), indicating that females who reported higher perceived product fit diagnosticity were more likely to purchase online, compared to females who reported lower perceived product fit diagnosticity. Interestingly, the results also showed that concerns with garment fit online on the females' purchase intentions was also positive and significant ($b = 0.09$, $SE = 0.04$ and $p = 0.05$), inferring that females who reported higher concerns with fit online were also more likely to purchase the dress online. Thus, it can be reasoned that, even though the females' express concerns with product assessment online, they may still be inclined to purchase given the current low cost of product returns. Additionally, the results suggested that while perceived product fit diagnosticity was found to significantly mediate the females' purchase intentions, concerns with fit online did not, providing new insights relating to the fundamental relationships between online clothing fit provision and purchase intentions online.

Finally, to date, limited research has investigated the influence of a fashion model on the online consumer decision-making process (Plotkina & Saurel, 2019; Boardman & McCormick, 2019). Thus, by shedding light on the importance of body shape on the consumers' online garment appraisal process, this study proposes a new research direction by introducing body shape as a factor of consideration in the online realm. Additionally, existing research concerning the impact of model body size on the consumers' purchase intentions has reported mixed results. Thus, this research adds to the current debate by establishing that purchase intentions were higher upon exposure to one body shape (vs. diverse body shapes). Overall, this research offers a better understanding of the role of human fashion models, particularly body shape provision, in online product presentation.

The study provides new insights into how fashion retailers can enhance the provision of fit information on their product pages. The findings indicate that fit information in visual formats is more effective than verbal formats at aiding consumers with their purchase decisions and so, this form should be prioritised by fashion retailers. In particular, we recommend that retailers should feature the option to see a garment on diverse body shapes on their websites and marketing communications because, although it decreased purchase intentions; it increased the consumer's understanding of the fit of the garment, which may reduce non-conformance and in turn, lead to fewer returns for retailers in the future. In addition, the findings from phase 2 provide retailers with an empirical understanding of the variety of diverse body shapes that exist amongst one demographic (UK females, 18–34). Thus, online retailers should incorporate this type of fit

information on their product pages to help assist consumers with their apparel fit decisions, which may boost revenues and reduce returns.

9 | CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

To conclude, the extension of the S-O-R framework provides a detailed understanding of how consumers formulate fit decisions online. This could be used in future research to understand how alternative fit stimuli (i.e. virtual try-on) impacts consumers' internal and final behavioural responses.

Despite the multifarious contributions offered by this research, the study is not without limitations. Data was acquired from an all-female sample, aged 18–34, based in the UK. Therefore, caution needs to be made when generalising the findings to other consumer groups. Future research could investigate if there are differences for other parts of the world. Further studies could also examine different age groups, as issues with fit and body shape often accentuate over time.

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CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, Dr Courtney Chrimes upon reasonable request.

ORCID

Courtney Chrimes  <https://orcid.org/0000-0002-4710-9885>

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AUTHOR BIOGRAPHIES

Dr Courtney Chrimes is a Lecturer in Fashion Digital Media at the Manchester Metropolitan University. She was awarded her EPSRC DTA Funded PhD in 2021 from The University of Manchester, which investigates how fashion product page design affects garment fit appraisal online through a mixed-methods enquiry. Her research primarily focuses on online website design, digital marketing, consumer behaviour, s-commerce and digital innovation, utilising a combination of both qualitative and quantitative methods of enquiry.

Dr Rosy Boardman is a Senior Lecturer in Fashion Business at The University of Manchester. Rosy's research primarily focuses on digital strategy and innovation in the fashion retail industry, utilising eye tracking and qualitative research methods. Her interest is in exploring fashion retail's current and the future developments, particularly in relation to how technology can be used to help solve issues relating to both environmental and social sustainability, as well as improving the customer experience. Rosy has published several peer-reviewed papers in both world-leading journals as well as two books, and has been invited as a key note speaker at various universities/conferences based on her eye tracking and digital marketing expertise.

Dr Gianpaolo Vignali is a graduate from UMIST with his first degree in Mathematics. Later adding a Masters in Strategic Management his career first started as a part-time Lecturer and Researcher at the Manchester Metropolitan University before moving to full-time employment in the Department of Retail at Leeds Metropolitan University. He then became the Programme Leader for Fashion Buying & Merchandising at the Manchester Metropolitan University until he achieved his PhD and moved to the Manchester University working in the School of Materials where he delivers on both undergraduate and post-graduate programmes. He has written over 40 papers and books in the field of Marketing and Management and presented at numerous international conferences. His current research focusses on the case study technique in the service sector which coincided with his PhD programme of study.

Dr Helen McCormick is a Reader in Fashion Marketing. As a subject specialist in fashion retail marketing, Helen conducts research in the areas of digital strategy and innovation in the retail industry, focusing on consumption behaviour, marketing communications

and customer engagement and more recently sustainable business practices in fashion retail and responsible consumption behaviour management. Her research interests follow contemporary issues considering how they affect consumer and business practices. Helen has an established track record of publishing in internationally recognised journals as well as attending Marketing, Management, Branding and Technology conferences. She has been invited as a keynote speaker at a number of events concerning her research utilising eyetracking technology and the changing retail environment.

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APPENDIX A: Results of reliability and EFA

Construct	EFA
<i>Perceived product fit diagnosticity</i> ($\alpha = 0.86$)	
Helped me to evaluate the physical fit of each dress (i.e., tightness/ looseness of the dress)	0.613
Helped me understand how each style of dress fits different body shapes	0.805
Helped me to understand whether I would like/dislike the fit of each dress on me	0.801
Helped me to get a real feel of the fit of each dress	0.786
Helped me to judge the functional fit of each dress (i.e., how well I could move in the dress)	0.677
Helped me to find answers to my questions about the fit of each dress	0.733
Helped me to make decisions regarding the fit of each dress	0.756
<i>Concerns with clothing fit online</i> ($\alpha = 0.92$)	
I am concerned that the dresses I have seen may not fit well	0.805
I am concerned that my body may not fit the dresses selling on the website	0.798
I am concerned the fit of the dresses may be different if I were to try them on at home	0.861
I am concerned the fit of the dress may be different from what I have seen on the website	0.819
I am concerned that the dresses may not fit all body types	0.772
I am concerned that my guess about the fit of the dresses may not be correct when shopping on the website	0.859
I am concerned that the dresses will fit me differently to how they fit on the model	0.801
<i>Purchase intentions</i> ($\alpha = 0.92$)	
How likely is it that you would seek out dresses from a website, similar to the one that you have viewed today, in order to purchase them?	0.903
How likely is it that you would shop from a website, similar to the one you have viewed today, in the upcoming year?	0.885
How likely is it that you would purchase a dress from a website, similar to what you have viewed today, for yourself?	0.929
How likely is it that you would consider purchasing from a website similar to what you have viewed today, in the near future?	0.851

APPENDIX B: UG fit reviews

Positive Reviews:

The fit of this dress is really good! At the bust it fits perfect, it's just a bit low cut, so you might need to wear something underneath. The fit at the waist is brilliant! It's very figure hugging. The fit accentuates my bum/hip area which I don't mind because it slims you down and makes you look slightly nicer. Also, with the slit on the side you can walk and feel comfortable in it. I would say it's true to size. It's really nice!

Recommend: Yes

True to size: Yes

I like this dress; it's nicely fitted on the top and on my legs and it's a bit looser on my stomach area which is good. No problems. It's a good fit. It fits nicely as it hugs my figure quite well. I went for the 8 and I would stick with that size. The dress compliments my body shape because it's nice and tight at the bum and at the top, so it shows off my body shape. It's a comfortable dress!

Recommend: Yes

True to size: Yes

Moderate Review:

The fit is quite accurate. It goes it at the waist which it's supposed to, but obviously because of the stretch the dress does cling to your body, so it's very revealing. The size 8 is true to size. The straps do not sit quite comfortably on the shoulder, but the actual body itself fits relatively. Because this dress has a tighter fit it does show that you have a bit of a shape, so it emphasises that my waist is quite small. Because of the stretch it allows you to move quite well.

Recommend: It depends.

True to size: Yes

Negative Review:

The fit of this dress is just tight all over, so it's impractical! It shows up my lumps and bumps and all of the areas of my body that I dislike about myself, like my belly and hips! I do not feel very comfortable in the dress as it makes me look bigger than I actually am. I would re-order a larger size. I like where the slit comes up to, but that's it.

Recommend: No

True to size: No

This dress is very tight! I tried my usual size on, but I would probably get a bigger just so it is a little bit baggier around the stomach area. It's a bit low cut. The straps are baggy, I feel like they would not be stable when I'm moving around. I feel uncomfortable because of the way the dress might look. I think the slit is way too short, I would not wear it this high. I think it's exposing quite a lot.

Recommend: No

True to size: No